

REVIEW OF *BLEPHARIDA* CHEVROLAT
(CHRYSOMELIDAE: ALTICINAE) IN
AMERICA NORTH OF MEXICO

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ABSTRACT

Blepharida dorothea, a new species, is separated from *B. rhois* (Forster). The name *B. rhois* now applies to the species with striped elytra, while the elytra of specimens of *B. dorothea* are mottled. *Blepharida dorothea* occurs from New Jersey to Colorado and south to Florida and southern Arizona. The main range of *B. rhois* is more northerly.

The genus *Blepharida* Chevrolat is the sole representative of the Blepharidini in the United States and Canada. This genus has heretofore been represented by only 1 species in this area, *B. rhois* (Forster). This is quite a variable species with elytral markings varying from vittae to mottled areas.

Hicks (1955) while working only with specimens from the Canadian National Collection was able to separate the specimens into 2 groups. The first, which had a more northern distribution, had the elytra always more or less vittate; while the second, which had a more southern distribution, had the elytra blotched or mottled. Hicks also noted that there were differences in the coloration of the antennae segments between the 2 forms.

I have seen nearly 1000 specimens from many collections and localities throughout the United States and Canada. In addition to the differences noted by Hicks, I have found differences in the lengths of antennae segments, differences in size and distribution of punctuation on both the pronotum and elytra, and differences in the shape of the male genitalia. The range of the vittate form is also much increased from that known to Hicks. I feel that there are sufficient differences involved and that there are 2 species present. The name *B. rhois* is now restricted to the striped species, the mottled species being new. For the sake of clarity, the genus and *B. rhois* are redescribed for comparison purposes along with the new species.

BLEPHARIDA CHEVROLAT

Blepharida Chevrolat, 1837. *In* Dejean, *Cat. Col.*, 3rd ed., p. 418.

Chevrolat, 1842:606; Rogers, 1856:29, Crotch, 1873:57, Chapuis, 1875:25, 32; Jacoby, 1885:385; Horn, 1889:167; Blatchley, 1910:1206-07; Duchett, 1920:116, 144; Leng, 1920:299; Heikertinger and Csiki, 1940:418-22; Arnett, 1963:936.

Type species of Genus. *Chrysomela rhois* Forster, 1771:21 (Designated by Chevrolat, 1842:606).

Description of Genus. These are small to moderate sized beetles; broadly oval to elongate oval, very convex, with the elytra either mottled or vittate, and the pronotum usually immaculate.

Head: oval, free, inserted in pronotum to posterior edge of eyes; frontal

tubercles usually flattened; fovea very small or absent; apex of mandible broad; maxillary palpi moderate; eyes moderate in size; antennae 11-segmented, short, extending only to anterior one-third of elytra, middle segments not broad or flat; interocular distance greater than one-half width of head.

Thorax: pronotum rectangular, widest near base, narrowed in front; front edge entire; without distinct impressions; usually immaculate; scutellum triangular; prosternum quite wide between coxae, procoxal cavities closed.

Legs: procoxae widely separated; claws bifid; metatibia bisulcate on outer face; apical spur of metatibia with a single point; first metatarsal segment less than one-half length of tibia, approximately equal in length to segments 2 and 3, distal segment not swollen.

Elytra: oval; wider at base than pronotum; punctures in striae, some of which reach the apex; glabrous.

Abdomen: all sterna free; pubescence pale, fine, evenly distributed.

Male genitalia: usually slightly arched dorsoventrally, ventral tip of median lobe longer than dorsal tip.

Sexual dimorphism. The females are slightly larger than the males; the first segment of the pro- and mesotarsi is more dilated in the males.

Distribution. This genus, of approximately 50 species is worldwide in its distribution. Only 1 previously described species, *B. rhois*, occurs in the United States.

KEY TO THE SPECIES OF *Blepharida* NORTH OF MEXICO

1. Elytra with red-brown vittae; antennae with segments 1 to 4 progressing from brown-testaceous to red-brown, segments 5 to 11 red-black, segments 4 and 5 subequal, longer than 3; elytra with extremely fine punctation between striae rare
 *B. rhois* Forster
- Elytra with red-brown mottling, no vittae; antennae with segments 1 to 4 red-brown, 5 to 11 red-black, segments 3, 4, and 5 progressively longer; elytra with extremely fine punctation between striae abundant and evenly distributed
 *B. dorothea* NEW SPECIES

Blepharida rhois (FORSTER)

Chrysomela rhois Forster, 1771:21. Nov. Spec. Ins.

Type locality: North America. [Neotype: Male, Westport, Massachusetts, vii/11.06, N. S. Easton Collection, MCZC; here designated].

Haltica rhois, Illiger, 1807. Mag. Ins., 6:161.

Blepharida rhois, Rogers, 1856. Proc. Acad. Nat. Sci. (Philadelphia), 8:29.

Chrysomela meticulosa Olivier, 1808. Ent., 5:531.

(Synonymy: Chevrolat, 1837:418).

Type locality: North America.

Blepharida atripennis Horn, 1895. Proc. California Acad. Sci., 6:249.

(Synonymy: Leng, 1920:299).

Type locality: Lower California. [Lectotype: Male, Lower California, ANSP].

Hubner, 1789:40; Crotch, 1873:76; Jacoby, 1885:385-389; Horn, 1889:168; Jacoby, 1891:306; Blatchley, 1910:1208; Duchett, 1920:144; Heiker-

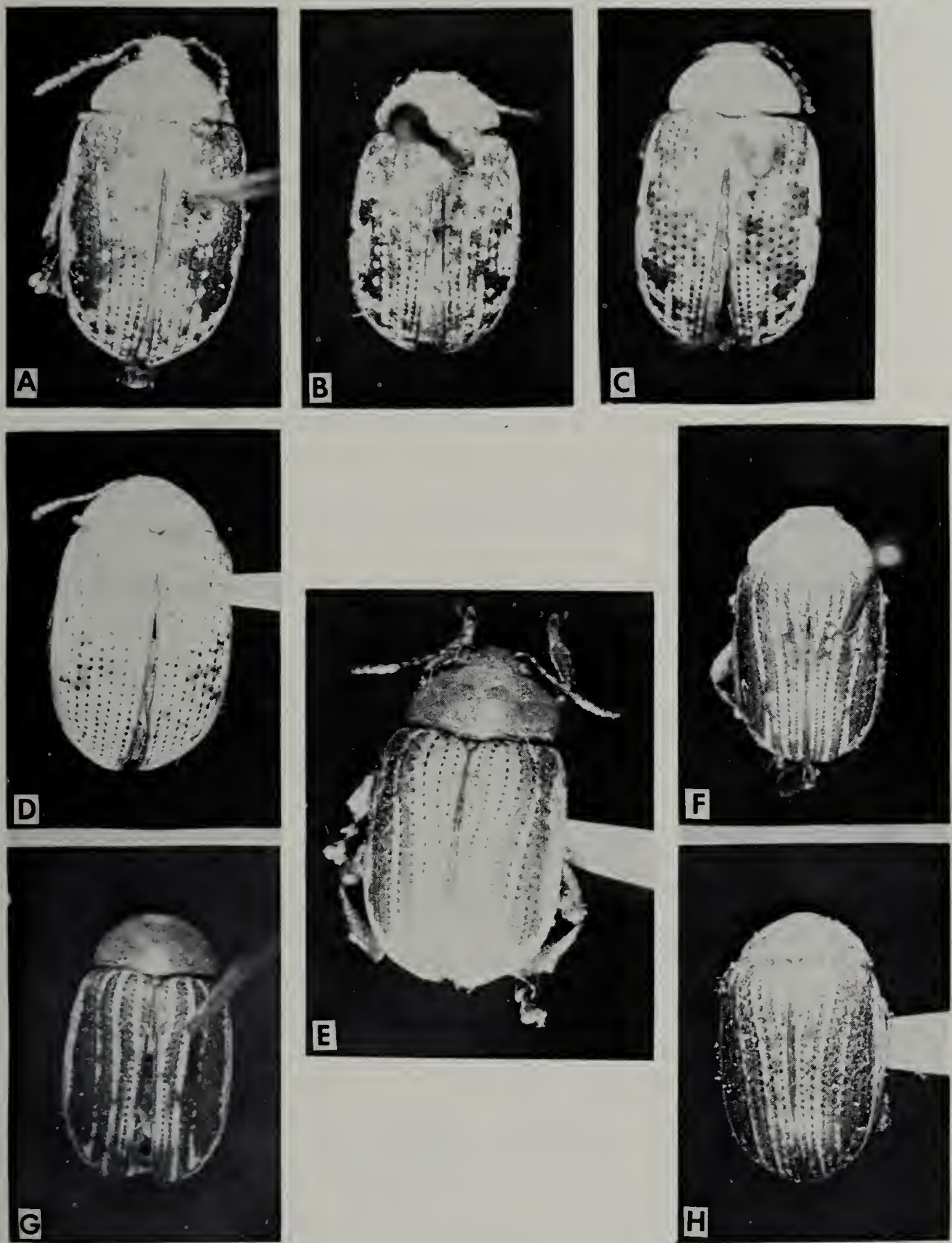


Fig. 1. A-D: Adult males of *B. dorothea*; E-H: Adult males of *B. rhois*.

tinger, 1925:50; Heikertinger and Csiki, 1940:419; Wilcox, 1954:436; Hicks, 1955:21-22; Arnett, 1963:936.

The red-brown elytral vittae will separate this species from all others in the United States and Canada.

Description of Neotype. Broadly oval, strongly convex, shining; testaceous except for red-brown elytral vittae, meso- and metasterna, abdominal sterna, and legs; total length 6.5 mm, greatest width 4.0 mm.

Head: shining; tubercles flattened, indistinct; fovea very small; punctation fine, scattered; interocular distance 1.1 mm, greater than one-half width of head; margin of labrum straight; antennae slender, extending to anterior one-third of elytra, segments 1 to 4 progressing from brown-testaceous to red-brown, segments 5 to 11 red-black, segments 4 and 5 subequal, longer than 3.

Thorax: pronotum narrowly margined, length 1.5 mm, greatest width 3.1 mm, width/length=2.1; punctation moderate, evenly distributed and in submarginal line from lateral one-third of base to lateral one-third of front; immaculate, even, no callosities. Scutellum red-brown, triangular, shining. Elytra oval, narrowly margined, rounded apex; distinct humeral prominences; punctation coarse, arranged in 11 striae per elytron, extremely fine punctation between striae rare, most sutural extends only to anterior one-third of elytra; striae 2 and 11, 3 and 4, 5 and 8, 6 and 7, and 9 and 10 join near apex; very narrow sutural, narrow discal, narrow medial, wide lateral, and very narrow marginal red-brown interrupted vittae; length 4.7 mm, greatest width 4.0 mm.

Legs: first metatarsal segment $1\frac{1}{2}$ times length of second.

Abdomen: first visible sternum longer than second.

Male genitalia: slightly arched dorsoventrally, $3\frac{1}{2}$ times as long as wide; basal piece narrowed in anterior one-half.

Females. The females are slightly larger than the males.

Individual variation. Total length 6.0-7.0 mm, greatest width 3.7-4.5 mm, interocular distance 0.8-1.1 mm, pronotal length 1.1-1.6 mm, pronotal width 2.7-3.4 mm, elytral length 4.9-5.7 mm, elytral width 3.7-4.5 mm. The elytral vittae may be very narrow and short in some specimens or the elytra may be completely red-brown.

Specimens examined. MAINE: *Penobscot Co.*, Milford (1:USNM), (1:USNM); NEW HAMPSHIRE: *Hillsboro Co.*, Wilton (4:MCZC), *Rockingham Co.*, Hampton (1:MCZC); MASSACHUSETTS: *Barnstable Co.*, Bourbe (1:MCZC), *Bristol Co.*, Falls River (1:MCZC), Somerset (1:MCZC), Swansea (1:MCZC), Westport (1 (Neotype):MCZC), *Franklin Co.*, Northfield (2:MCZC), *Hampden Co.*, Springfield (2:MCZC, 4:USNM), *Middlesex Co.*, Ashland (1:MCZC), Cambridge (4:MCZC, 1:USNM), Framingham (1:MCZC), Holliston (4:MCZC), Tyngsboro (6:MCZC), (1:USNM), *Nantucket Co.*, Nantucket (1:MCZC), *Norfolk Co.*, Millis (4:MCZC), Milton (1:MCZC), *Plymouth Co.*, Marion (1:MCZC), *Suffolk Co.*, Boston (1:MCZC), Dorchester (1:MCZC), *Worcester Co.*, Smithboro (2:AMNH), (1:CASC); RHODE ISLAND: *Newport Co.*, Riverton (11:MCZC); CONNECTICUT: *Hartford Co.*, New Briton (1:USNM), *New Haven Co.*, New Haven (2:MCZC), *New London Co.*, Lyme (3:USNM), (1:USNM); NEW YORK: *Richmond Co.*, Staten Island (3:AMNH), *Suffolk Co.*, Greenwood (2:CASC), Quoque (6:USNM), Riverhead (2:USNM), (4:LACM, 1:USNM); NEW JERSEY: *Atlantic Co.*, Somers Point (1:MCZC), *Bergen Co.*, Ramsey (1:AMNH), *Camden Co.*, Camden (6:CASC), *Cape May Co.*, Cape May (9:ANSP), *Cumberland Co.*, Bridgeton (1:USNM), *Monmouth Co.*, Asbery Park (1:MCZC), *Morris Co.*, Boonton (1:USNM), *Passaic Co.*, Clifton (1:USNM), Greenwood Lake (1:AMNH), *Warren Co.*, Delaware Water Gap (1:USNM), Phillipsburg (1:CASC), (2:USNM); PENNSYLVANIA: *Allegheny Co.*, Pittsburgh (3:ICCM), *Dauphin Co.*, (1:USNM), *Delaware Co.*, Glen Olden (1:USNM), *Monroe Co.*, Water Gap (1:MCZC), *Northampton Co.*, Easton (30:CASC), *Westmoreland Co.*, Jeannette (166:ICCM), (2:CASC, 2:LACM, 9:MCZC, 3:USNM); MARYLAND: *Baltimore Co.*, Baltimore (35:CACS, 4:LACM, 5:MCZC), *Frederick Co.*, Myersville (2:USNM), *Montgomery Co.*, Glen

Echo (9:USNM), *Washington Co.*, Hagerstown (14:USNM), (1:USNM); VIRGINIA: *Fairfax Co.*, Falls Church (1:MCZC, 5:USNM), Vienna (6:USNM), (2:ANSP), *Nelson Co.*, (3:USNM), (1:MCZC, 6:USNM); OHIO: (1:USNM); INDIANA: *LaGrange Co.*, (5:MCZC); MICHIGAN: *Ingham Co.*, East Lansing (10:CASC), *Washtenaw Co.*, Ann Arbor (7:LACM), *Wayne Co.*, Grosse Point (6:MCZC); ILLINOIS: *Cook Co.*, Chicago (3:CASC); MINNESOTA: *Case Co.*, Gull Lake (2:USNM), *Houston Co.*, (1:USNM), *Washington Co.*, Lakeland (2:USNM), *Wright Co.*, Buffalo (1:USNM); SOUTH DAKOTA: *Clay Co.*, Vermillion (2:USNM), *Stanley Co.*, (1:USNM), IOWA: (7:USNM); OKLAHOMA: *Comanche Co.*, Cache (3:USNM); UTAH: *Washington Co.*, Zion Nat. Park (2:USNM); MONTANA: (2:USNM); CANADA: ONTARIO: eastern Ontario (1:CASC); ALBERTA: Medicine Hat (11:CASC, 12:MCZC).

Distribution. This species has a northern distribution extending from Maine to Virginia in the east to Alberta and Montana in the west. There are also disjunct populations in southern Utah and in Oklahoma.

Blepharida dorothea MIGNOT, NEW SPECIES

Type locality, Southern Pines, North Carolina. [Holotype: Male, Southern Pines, North Carolina, collected by A. H. Manee, MCZC].

The red-brown mottling on the elytra will separate this species from *B. rhois*.

Description of Holotype. Broadly oval, strongly convex, shining;

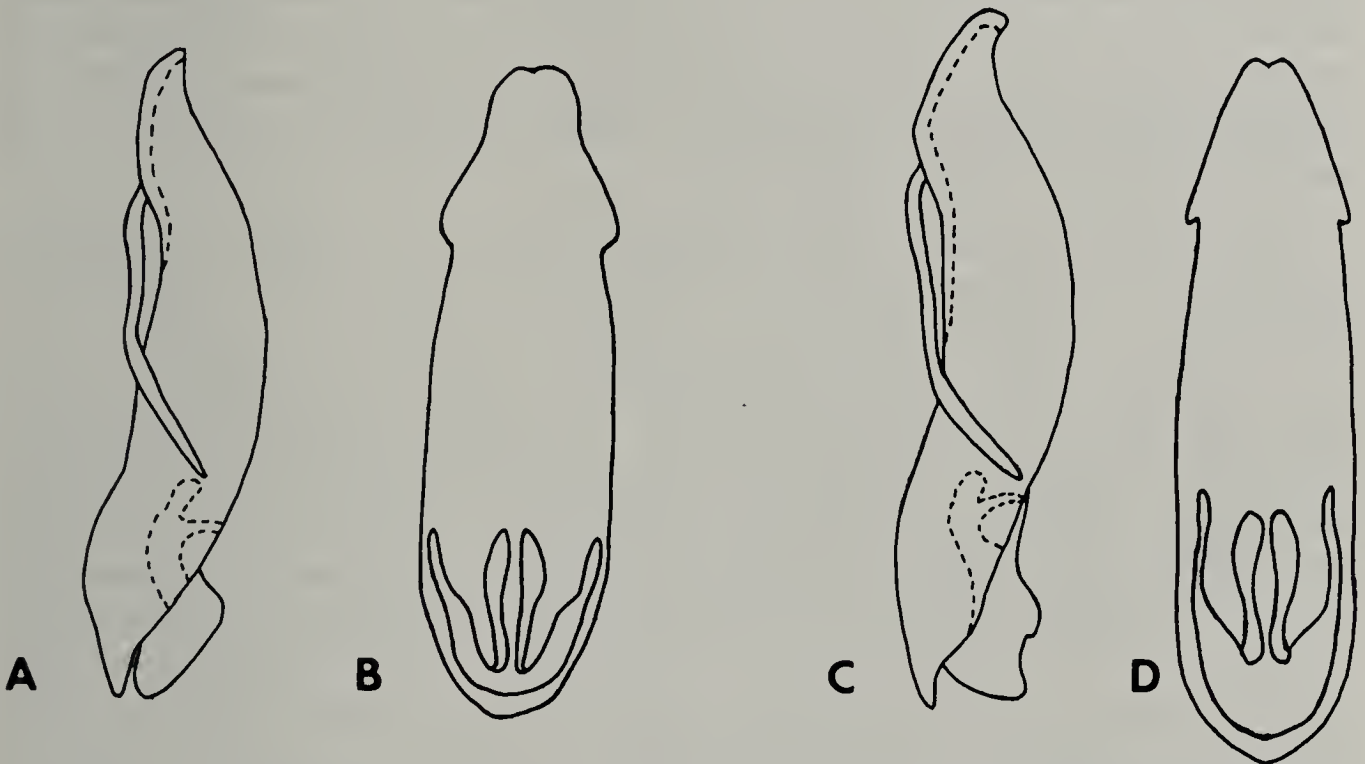


Fig. 2. A: Male genitalia of *B. rhois*, lateral view; B: Male genitalia of *B. rhois*, dorsal view; C: Male genitalia of *B. dorothea*, lateral view; D: Male genitalia of *B. dorothea*; dorsal view.

Fig. 3. Distribution of *B. rhois* and *B. dorothea*.

yellow-testaceous except for red-brown mottling on elytra, meso- and metasterna, abdominal sterna, and legs; total length 6.8 mm, greatest width 4.4 mm.

Head: shining; tubercles flattened, indistinct; fovea represented by 2

small impressed lines near base of antennae; punctation moderate, scattered; interocular distance 1.2 mm, greater than one-half width of head; margin of labrum straight; antennae slender, extending to anterior one-third of elytra, segments 1 to 4 red-brown, 5 to 11 red-black, segments 3, 4, and 5 progressively longer.

Thorax: pronotum narrowly margined; length 1.5 mm, greatest width 3.4 mm, width/length = 2.3; punctation fine, evenly distributed and moderate in submarginal line from lateral one-third of base to lateral one-third of front; immaculate, even, no callosities. Scutellum red-brown, rounded, shining. Elytra oval, narrowly margined, rounded apex; distinct humeral prominences; punctation coarse, arranged in 11 striae per elytron, extremely fine punctation between striae numerous, evenly distributed; most sutural striae extends only to anterior one-third of elytra, striae 2 and 11, 3 and 4, 5 and 8, 6 and 7, and 9 and 10 join near apex; red-brown mottled area covering two-thirds of elytra surface, margin red-brown; length 5.4 mm, greatest width 4.4 mm.

Legs: first metatarsal segment $1\frac{1}{2}$ times length of second.

Abdomen: first visible sternite longer than second.

Male genitalia: slightly arched dorsoventrally, $3\frac{3}{4}$ times as long as wide; basal piece gradually narrowing anteriorly.

Females. The females are slightly larger than the males.

Individual variation. Total length 5.6-7.7 mm, greatest width 3.2-4.6 mm, interocular distance 1.0-1.2 mm, pronotal length 1.1-1.7 mm, pronotal width 2.5-3.6 mm, elytral length 4.3-5.9 mm, elytral width 3.2-4.6. The mottled elytral markings will vary quite extensively. Some specimens may be almost entirely pale with only a few red-brown spots. The presence of the striae may give a striped appearance to some specimens, however, the mottling rarely forms in the shape of vittae. Antennae segments 1 to 4 may be lighter on some specimens.

Specimens examined. NEW JERSEY: Camden Co., Atco (17:MCZC); MARYLAND: Prince George Co., College Park (1:USNM); VIRGINIA: Hampden (3:USNM), Norfolk (1:PURC, 6:USNM), New Kent Co., (4:USNM); NORTH CAROLINA: Gaston Co., Gastonia (1:LACM), Moore Co., Southern Pines (1(Holotype):MCZC, 1(Paratype):ECMC, 2(Paratypes):MCZC), Swain Co., Bryson City (1:MCZC); SOUTH CAROLINA: Aikens Co., Aikens (1:MCZC), Pickens Co., Clemson College (1:USNM), (1:AMNH, 4:MCZC, 2:USNM); GEORGIA: Chatham Co., Savannah (1:LACM), Glynn Co., Brunswick (2:USNM), Thomas Co., Thomasville (1:AMNH), (1:MCZC, 1:USNM); FLORIDA: Alachua Co., Gainesville (1:AMNH, 2(Paratypes):CASC, 2(Paratypes):ECMC, 1:USNM), Hawthorne (7:USNM), Calhoun Co., Blountstown (1:USNM), Charlotte Co., Punta Gorda (17:LACM), Dade Co., Royal Palm Park (3:AMNH), Highlands Co., Lake Placid (1:AMNH), Indian River Co., Sebastian (3:MCZC), Liberty Co., Bristol (1(Paratype):ECMC, 1(Paratype):USNM), Marion Co., Ocala (7(Paratypes):ECMC, 8(Paratypes):USNM), Monroe Co., Paradise Key (1:USNM), Nassau Co., Callahan (1:USNM), Okaloosa Co., Valpariso (6:AMNH), Orange Co., Orlando (3:CASC, 5(Paratypes):CASC, 12(Paratypes):ECMC, 7:LACM, 10:USNM, 5(Paratypes):USNM), Pinellas Co., Gulfport (5(Paratypes):CASC, 5(Paratypes):ECMC, 1:MCZC), Dunedin (3:PURC), Santa Rosa Co., Milton (2:USNM), Volusia Co., DeLeon Springs (2(Paratypes):ECMC, 2(Paratypes):MCZC), (5:AMNH, 13:CASC, 2:ICCM, 1:LACM, 4:MCZC, 1:PURC, 30:USNM); ALABAMA: Jefferson Co., Birmingham (3:USNM), Lamar Co., Vernon (1:USNM), Mobile Co., Mobile (2:USNM), (4:AMNH); MISSISSIPPI: George Co., Lucedale (2:LACM), Harrison Co., Gulfport (2:USNM), Lincoln Co.,

Brookhaven (1:USNM); LOUISIANA: *Ouachite Co.*, Monroe (1:USNM); TEXAS: *Brewster Co.*, Chisos Mts. (2:CASC, 2:USNM), *Bexar Co.*, San Antonio (2:CASC), *Cherokee Co.*, Jacksonville (2:USNM), *Dallas Co.*, Dallas (1:ANSP, 1:MCZC), *El Paso Co.*, (2:USNM), *Jasper Co.*, Kirbyville (3:USNM), *Jeff Davis Co.*, Fort Davis (1:CASC), *Pecos Co.*, Sheffield (2:CASC), *Terrell Co.*, Dryden (17:CASC), Sanderson (1:CASC), *Val Verde Co.*, (1:CASC, 1:MCZC), (7:ANSP, 3:CASC, 7:MCZC, 4:USNM); ARKANSAS: *Garland Co.*, Hot Springs (2:AMNH); TENNESSEE: *McNairy Co.*, Selmer (7:AMNH, 6 (Paratypes):AMNH, 5 (Paratypes):ECMC), *Wilson Co.*, Lebanon (2:USNM); OHIO: *Hamilton Co.*, Cincinnati (1:CASC), *Summit Co.*, Hudson (1:MCZC), (1:CASC); INDIANA: *Clark Co.*, State Forest (5(Paratypes):ECMC, 5 (Paratypes):PURC), *Harrison Co.*, (2:PURC), *Kosciusko Co.*, (1:PURC), *Lake Co.*, (1:PURC), *Putnam Co.*, (1:PURC), *St. Josephs Co.*, Mishawaka (3:PURC), *Tippecanoe Co.*, Lafayette (5(Paratypes):ECMC, 6 (Paratypes):PURC), (6(Paratypes):ECMC, 6(Paratypes):PURC), *Warren Co.*, *Greenhill* (4:USNM), (6:ANSP, 6:CASC); MICHIGAN: *Washtenaw Co.*, (3:USNM); ILLINOIS: *Calhoun Co.*, Kamperville (4:MCZC, 4:USNM), *Cook Co.*, Palos Park (1:LACM); WISCONSIN: *Crawford Co.*, Prairie du Chien (2:USNM), *Dane Co.*, *Madison* (5:MCZC), (1:CASC), *Sauk Co.*, Reedsburg (3:USNM), (2:MCZC); IOWA: *Crawford Co.*, (1:MCZC); Missouri: *St. Louis Co.*, St. Louis (1:USNM), *Websters Grove* (1:LACM, 4:USNM), (1:MCZC); KANSAS: *Butler Co.*, Douglas (2:ICCM), *Pottawatomie Co.*, Onago (2:CASC), *Riley Co.*, (3:USNM), *Shawnee Co.*, Topeka (13:USNM), (1:CASC, 22:PURC); OKLAHOMA: *Carter Co.*, Ardmore (3:USNM), *Cleveland Co.*, (3:CASC), *Woodward Co.*, Woodward (7:USNM); COLORADO: *Fremont Co.*, Canon City (4:USNM), *Huerfano Co.*, La Veta (1:USNM), *La Platte Co.*, Platte Canyon (1:USNM), *Larimer Co.*, Fort Collins (1:MCZC), (1:MCZC, 3:USNM); NEW MEXICO: *Colfax Co.*, Maxwell (11:USNM), *De Baca C* Alamogordo (1:ANSP), *Sandoval Co.*, Jemez Mts. (2:CASC); ARIZONA: *Coconino Co.*, Grand Canyon (1:USNM), *Navajo Co.*, Winslow (1:MCZC), *Santa Cruz Co.*, Nogales (8:CASC).

Distribution. The distribution of this species is more southern than is that of *B. rhois*. It extends from New Jersey to Florida in the east to Colorado and Arizona in the west. Hicks (1955) reported some specimens from Canada, but I have not seen any that occurred north of southern Wisconsin.

DISCUSSION

The ranges of the 2 species overlap between 38° and 43° N. latitude. In this area, however, the elytral patterns of these species are quite distinct and thus there should be no confusion in the determination of species. North of this area, the elytral stripes of *B. rhois* become indistinct in some specimens. However, other characters persist that will separate this species from *B. dorothea*.

Both species feed on sumac (*Rhus* spp.). *Blepharida rhois* feeds on *Rhus aromatica* A.T., while *B. dorothea* feeds on *R. typhina* L., *R. copalina* L., and *R. vernix* L. In addition *B. rhois* has been collected from strawberries while *B. dorothea* has been collected on *Pinus palustris* Mill. and Brazilian pepper (*Schinus* spp.).

The names *B. stolidus* (Fab.) and *B. virginica* (Frolich) have been synonymized by previous workers with *B. rhois*. However, some doubt has existed over these names for over 100 years. Olivier (1807) suggested that *B. stolidus* refers to a South American species. Jacoby (1885, 1891) knew of no such species in Central America; however, this may still be a

South America species. The second name, *B. virginica*, was based on specimens from Virginia. However, the description fits neither *B. rhois* nor *B. dorothea*. Therefore, I believe that it is best to consider both *B. stolidus* and *B. virginica* as *incertae sedis* rather than to doubtfully synonymize them with *B. rhois*.

A final point that should be mentioned concerns the authorship of the genus *Blepharida*. Heikertinger and Csiki (1940) and more later workers including Arnett (1963) have considered the genus *Blepharida* to have originated in Rogers' work of 1856. However, Chevrolat in 1837 in the third edition of Dejean's Catalogue lists the name *Blepharida* under which he placed 9 names and synonymized the then valid species *Chrysomela meticulosa* and *C. rhois*. Thus to Chevrolat belongs the authorship of the genus *Blepharida*.

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